

We claim as our invention:

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1. A method for storing multimedia information on a medium, comprising:
 - receiving encoded packets of the multimedia information, a subset of the encoded packets including timing information arriving at least every predetermined time period;
 - adding storage timing fields to respective corresponding encoded packets;
 - when a corresponding encoded packet does not include the timing information, storing a value from a timing generator into a given storage timing field;
 - when the corresponding encoded packet includes the timing information, storing a value from the timing information of the corresponding encoded packet into the given storage timing field and resetting the value in the timing generator; and
 - storing the corresponding encoded packet onto the medium.
 2. The method of claim 1, wherein the received encoded packets are in an MPEG2 format.
 3. The method of claim 1, wherein the storage timing field includes a 42 bit timing value.
 4. The method of claim 1, wherein the predetermined time period is 100 milliseconds.

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5. The method of claim 1, wherein the resetting of the value in the timing generator comprises setting the timing generator to the value in the timing information.

6. A method for retrieving multimedia information stored on a medium, comprising:
reading a signal recorded on the medium, the signal representing encoded packets of
multimedia information, a respective corresponding encoded packet including a given first
timing information in a storage timing field;

comparing the given first timing information in the storage timing field to a timing value from a timing generator;

removing the given storage timing field from the respective corresponding encoded packet and outputting the respective corresponding encoded packet to a decoder when the act of comparing indicates that a respective transmission time has been reached.

7. The method of claim 6, wherein the respective transmission time is a time which is a predetermined time period earlier than a time indicated by the first timing information.

8. The method of claim 6, wherein a subset of the encoded packet include second timing information outside of the storage timing field.

9. The method of claim 6, wherein the encoded packet output to the decoder is in an MPEG2 format.

10. The method of claim 6, wherein the storage timing field includes a 42 bit timing value.

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11. An apparatus for storing multimedia information on a medium, comprising
a storage area for storing a received encoded packet of a plurality of encoded packets,
the encoded packets including the multimedia information, and a subset of the encoded
packets including timing information arriving at least every predetermined time period;
a timing field adder to add a storage timing field to the encoded packet in the storage
area;
a timing generator;
a determiner to determine whether the encoded packet in the storage area includes the
timing information;
a packet storer for storing the encoded packet, including the storage timing field, onto
the medium, wherein:
the timing field adder includes a timing field storer for reading and storing a value of
the timing information into the storage timing field and resetting a value in the timing
generator when the determiner determines that the encoded packet in the storage area includes
the timing information, and the timing field storer for reading and storing the value of the
timing generator into the storage timing field when the determiner determines that the
encoded packet in the storage area does not include the timing information.
12. The apparatus of claim 11, wherein the received encoded packet is in an MPEG2
format.
13. The apparatus of claim 11, wherein the storage timing field includes a 42 bit
timing value.

14. The apparatus of claim 11, wherein the predetermined time period is 100 milliseconds.

15. The apparatus of claim 11, wherein when the timing field storer resets the value in the timing generator, the timing generator is reset to the value in the timing information.

16. An apparatus for retrieving multimedia information stored on a medium, the apparatus comprising:

a receiver for receiving a read signal from the medium, the signal representing encoded packets of multimedia information, respective corresponding encoded packets including a given first timing information in a storage timing field;

a timing generator;

a comparer for comparing the given first timing information in the storage timing field to a timing value from the timing generator;

a remover for removing the storage timing field from the respective corresponding encoded packet and outputting the respective corresponding encoded packet to a decoder when the comparer indicates that a respective transmission time has been reached.

17. The apparatus of claim 16, wherein the respective transmission time is a time which is a predetermined time period earlier than a time indicated by the first timing information.

18. The apparatus of claim 16, wherein a subset of the encoded packets include second timing information outside of the storage timing field.

19. The apparatus of claim 16, wherein the respective corresponding encoded packet output to the decoder is in MPEG2 format.

20. The apparatus of claim 16, wherein the storage timing field includes a 42 bit timing value.

21. A method for storing and retrieving multimedia information, comprising:
receiving encoded packets of the multimedia information, a subset of the encoded packets including timing information arriving at least every predetermined time period;
adding storage timing fields to respective corresponding encoded packets;
when the corresponding encoded packet does not include the timing information, storing a value from a receive timing generator into a given storage timing field;
when the corresponding encoded packet includes the timing information, storing a value from the timing information of the corresponding encoded packet into the given storage timing field and resetting the value in the receive timing generator; and
storing the corresponding encoded packet onto a medium;
reading a signal recorded on the medium, the signal representing encoded packets of multimedia information;
comparing a value in a given storage timing field of a respective read corresponding encoded packet to a value from a send timing generator; and

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removing the given storage timing field from the read respective corresponding encoded packet and outputting the respective corresponding encoded packet to a decoder when the act of comparing indicates that a respective transmission time has been reached.

22. The method of claim 21, wherein the received respective corresponding encoded packet and the outputted respective corresponding encoded packet are in an MPEG2 format.

23. The method of claim 21, wherein the storage timing fields include a 42 bit timing value.

24. The method of claim 21, wherein the predetermined time period is 100 milliseconds.

25. The method of claim 21, wherein the respective transmission time is a time which is a second predetermined time period earlier than a time indicated by the value in the respective storage timing field.

26. An apparatus for storing multimedia information to a medium and retrieving the multimedia information from the medium, the apparatus comprising:

a storage area for storing a received encoded packet of a plurality of encoded packets, the encoded packets including the multimedia information, and a subset of the encoded packets including timing information arriving at least every predetermined time period;

a timing field adder to add a storage timing field to the encoded packet in the storage area;

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a receive timing generator;

a determiner to determine whether the encoded packet in the storage area includes the timing information;

a packet storer for storing the encoded packet, including the storage timing field, onto the medium;

a receiver for receiving a read signal from the medium, the signal representing the encoded packet of multimedia information, the encoded packet including the storage timing field;

a send timing generator;

a comparer for comparing the value in the storage timing field to a timing value from the send timing generator;

a remover for removing the storage timing field from the encoded packet and outputting the encoded packet to a decoder when the comparer indicates that a respective transmission time has been reached, wherein:

the timing field adder includes a timing field storer for reading and storing a value of the timing information into the storage timing field and resetting a value in the receive timing generator when the determiner determines that the encoded packet in the storage area includes the timing information, and the timing field storer for reading and storing the value of the receive timing generator into the storage timing field when the determiner determines that the encoded packet in the storage area does not include the timing information.

27. The apparatus of claim 26, wherein the received encoded packet and the outputted encoded packet are in an MPEG2 format.

28. The apparatus of claim 26, wherein the storage timing field includes a 42 bit timing value.

29. The apparatus of claim 26, wherein the predetermined time period is 100 milliseconds.

30. The apparatus of claim 26 wherein the respective transmission time is a time which is a second predetermined time period earlier than a time indicated by the value in the respective storage timing field.

31. The apparatus of claim 26, wherein when the timing field adder resets the value in the receive timing generator, the receive timing generator is reset to the value of the timing information.

32. A machine-readable medium having recorded therein machine-readable information, such that when the machine-readable information is read and executed by a processor within a storage device for storing multimedia information, the processor is caused to direct the storage device to:

receive encoded packets of the multimedia information, a subset of the encoded packets to include timing information arriving at least every predetermined time period;

add storage timing fields to respective corresponding encoded packets;

when the corresponding encoded packet does not include the timing information, store a value from a timing generator into a given storage timing field;

when the corresponding encoded packet includes the timing information, store a value from the timing information of the corresponding encoded packet into the given storage timing field and reset the value in the timing generator; and store the encoded packet onto the medium.

33. The machine-readable medium of claim 32, wherein the received encoded packets are in an MPEG2 format.

34. The machine-readable medium of claim 32, wherein the given storage timing field includes a 42 bit timing value.

35. The machine-readable medium of claim 32, wherein the predetermined period is 100 milliseconds.

36. A machine-readable medium having recorded therein machine-readable information, such that when the machine-readable information is read and executed by a processor within a storage device for retrieving stored multimedia information, the processor is caused to direct the storage device to:

read a signal recorded on a medium for storing the multimedia information, the signal representing encoded packets of multimedia information, the encoded packets including a respective first timing information in a given storage timing field;

compare the respective first timing information in the given storage timing field to a timing value from a timing generator;

remove the given storage timing field from the respective encoded packet and outputting the encoded packet to a decoder when the act of comparing indicates that a respective transmission time has been reached.

37. The machine-readable medium of claim 36, wherein the respective transmission time is a time which is a predetermined time period earlier than a time indicated by the first timing information.

38. The machine-readable medium of claim 36, wherein a subset of the encoded packets include second timing information outside of the given storage timing field.

39. The machine-readable medium of claim 36, wherein the respective encoded packet output to the decoder is in an MPEG2 format.

40. The machine-readable medium of claim 36, wherein the given storage timing field includes a 42 bit timing value.